A NEW APHELINID EGG PARASITE OF THE SARATOGA SPITTLEBUG, APHROPHORA SARATOGENSIS (FITCH) (HYMENOPTERA, APHELINIDAE)[1]

By H. E. Milliron, *Bureau of Entomology and Plant Quarantine, United States Department of Agriculture*

During the late summer and early fall of 1946, while the biology of the Saratoga spittlebug, *Aphrophora saratogensis* (Fitch), was being studied in the vicinity of Lakewood, Wisconsin, two chalcidoid egg parasites of the above insect were discovered, both of which appear to be undescribed. The author has since described one of these, a mymarid.[2] The one here described, an aphelinid, belongs in the genus *Tumidiscapus* Girault.

In the following description F-I, F-II, etc., refer to segments of the antennal funicle, and the wing veins are indicated by *Sm* (submarginal), *M* (marginal), *Pm* (postmarginal), and *S* (stigmal).

Tumidiscapus cercopiphagus, n. sp.

Female.—Length, including ovipositor sheaths, about 1 mm. Natural shape of head from above transverse oval, as wide as the thorax; frontovertex as limited posteriorly by imaginary transverse line just behind lateral ocelli, and anteriorly by imaginary transverse line located forward approximately one-third the inner eye margin, granularly sculptured, remainder of head, thorax, and abdomen minutely reticulose; eyes hairy; antenna six-segmented (without considering possible occurrence of a simple ring segment), finely pubescent, scape subcylindrical, slightly bent, longer than the funicle and almost as long as the pedicel and funicle combined; pedicel slightly longer than F-I and F-II combined, subequal to F-II and F-III; (a small, narrow ring segment appears to be evident on a few specimens well mounted on slides); F-I somewhat triangular, the upper margin much less than the lower margin (less than one-half at most), the distal margin obliquely truncate; F-II one and one-half times as long as thick, about equal to F-III but somewhat narrower; F-III almost as thick as long and as thick as the club; club solid, about three times as long as its greatest thickness, about equal in length to the funicle, and terminating in a sharp curved apex; mandibles tridentate. Parapsidal grooves well defined, complete; scutellum broader than long, nearly circular except for anterior margin which is straight, it and the praescutum with a very faint median longitudinal impression; strong median carina on propodeum due to collapse of lateral integument (best seen on dried specimens). Abdomen longer than

[1]The writer is indebted to A. B. Gahan, of the Bureau of Entomolgy and Plant Quarantine, for checking the manuscript.

[2]Milliron, H. E., 1947. A mymarid which parasitizes the eggs of the Saratoga spittlebug. Ann. Ent. Soc. Amer., 40: 217-220.

head and thorax, and about as wide as thorax, sessile, acuminate posteriorly; ovipositor exserted approximately one-sixth the length of the abdomen or about the length of the hind basitarsus. Forewing about three times as long as the greatest width, and extending beyond tip of the ovipositor; *Sm* and *M* about equal. *Pm* absent, *S* very short and apparently acutely incised at apex; distinct hairless line extending obliquely proximad from end of *S* to inner wing margin, and base of wing to end of *Sm* nearly bare, otherwise discal cilia rather dense; longest marginal cilia about equal to one-fourth the greatest wing width; hind wing with weak discal cilia, the longest marginal cilia almost equal to the greatest wing width. Legs rather slender; first hind tarsal segment longer than the second, the latter longer than the third, the fourth and fifth nearly equal. Color: Fronto-vertex (granularly sculptured area) and narrow line bordering eye posteriorly yellow, remainder of head infuscated; area surrounding mouth somewhat lighter, but dark posterior region sharply differentiated below a straight transverse line just above occipital foramen; pronotum and sides of thorax deep fulvous; thorax above flavotestaceous, usually somewhat more pallid to light yellow along margins of praescutum, over parapsides and axillae, along lateral and anterior margins of scutellum, along entire median longitudinal impression, on postscutellum at least medially, and on propodeum; abdomen brownish yellow or amber, being darker or slightly infuscated on the venter near origin of ovipositor and at sides of basal segments; ovipositor sheaths brownish yellow; antennae fuscous; legs mostly fulvous, the front tibia and tarsus slightly darker; wings subhyaline with distinct infuscated spot located below proximal one-third of *M* and distad of the sparsely ciliated basal area.

Male.—Length, about 0.7 mm. Structurally similar to the female except that the scape is much enlarged and minutely granularly sculptured (with living specimens this segment is bulbous or inflated and about as large as the head, but after death it soon collapses and its shape is then distorted); remainder of antenna like that of female except shorter, and F-I is proportionately larger and less obliquely truncate at its apex; F-II subequal to F-III; club about two-fifths as thick as long and equal to the funicle; abdomen nearly as long as head and thorax, acute at apex but not acuminate; forewing proportionately narrower than that of female, its longest marginal cilia equal to one-third the greatest wing width, while the longest marginal cilia of the hind wing are longer than the greatest wing width. Coloration similar to that of female except antennae lighter; head and thorax above more pallid, and pronotum, sides of thorax and the abdomen usually darker; infuscated spot at base of forewing weaker.

Type locality: Lakewood, Wisconsin.

Type: Cat. No. 58268 U. S. N. M.

Described from a series of 37 females and 19 males, all reared by the writer October 6-25, 1946, from eggs of *Aphrophora saratogensis* (Fitch) collected September 16-26, 1946.

Holotype (female), allotype (male), and 14 paratypes (8 females, 6 males) are mounted on slides; 40 paratypes (28 females, 12 males) are mounted on card points; all deposited in the collection of the United States National Museum, except 3 paratypes (2 females, 1 male), at the Milwaukee laboratory of the Bureau of Entomology and Plant Quarantine.

Variations: The lightest colored females examined are without the deep fulvous on the head, pronotum, and sides of the thorax, but there is a definite brownish tinge to these parts. The yellow on the head, and at least parts of the thorax above, may be light or lemon yellow, rather than golden yellow. Sometimes the female antenna are deep fuscous. The male antennae, while usually paler than those of the female, may be deep fulvous.

In size, including the ovipositor sheaths, females examined range from 0.8 to 1.2 mm., and males from 0.5 to 0.8 mm. Apparently the ovipositor sheaths are rarely exserted slightly more than the length of the hind basitarsus.

Color characterization of the species as given applies chiefly to specimens mounted on card points rather than to the types, as slide specimens usually appear paler throughout.

Tumidiscapus cercopiphagus, n. sp. A. Female antenna. B. Male antenna. C. Lateral aspect of male scape (and pedicel) of a dried specimen.

The foregoing species is the fourth of the known North American representatives which have been described. *T. australiensis* Gir. occurs in Queensland, Australia, and *T. oophagus* Gir. in southern India. *T. cercopiphagus*, particularly females, may be distinguished without great difficulty by the characters given in the following key, which is essentially that published by Gahan[3] with certain slight modifications.

Key to the North American Species of *Tumidiscapus* Girault

1. Females 2
   Males 5
2. Ovipositor sheaths extending beyond apex of abdomen about equal to length of hind basitarsus or slightly less 3

[3]Gahan, A. B., 1932. Miscellaneous descriptions and notes on parasitic Hymenoptera. Ann. Ent. Soc. Amer., 25: 736-757.

Ovipositor sheaths extending beyond apex of abdomen a distance distinctly greater than the length of the hind basitarsus 4

3. Forewings with distinct infuscation near base; head behind eyes, pronotum and sides of thorax mostly deep fulvous
cercopiphagus, n. sp.
Wings hyaline; body color nearly uniformly pale testaceous
flavus Gir.

4. Ovipositor sheaths extending beyond apex of abdomen a distance equal to first and second segments of hind tarsus combined, but not nearly half the length of the abdomen; body color fusco-testaceous ..... *orchelimumis* Gah.
Ovipositor sheaths extending beyond apex of abdomen a distance equal to first four segments of the hind tarsus, nearly or half the length of the abdomen; body color yellow ..... *orthopterae* Gah.

5. Scape very broad, subquadrate to nearly circular 6
Scape ovoid or elliptical, distinctly longer than broad 7

6. Color of head beneath distinctly, sides of thorax and abdomen somewhat, fuscous; forewing with at least a fuscous tinge near base; fourth and fifth antennal segments distinctly less than twice as long as thick ..... *cercopiphagus*, n. sp.
Color uniformly pale yellowish; wings hyaline; fourth and fifth antennal segments approximately twice as long as thick
orthopterae Gah.

7. Scape uniformly testaceous; body color nearly uniformly testaceous; wings hyaline ..... *flavus* Gir.
Scape with a large blackish or dark fuscous area on lower apical margin; body color fusco-testaceous; wings with a distinct fuscous tinge ..... *orchelimumis* Gah.

Biological Observations

Limited observations have shown that either one or two *cercopiphagus* may occur in an egg of its host. In one instance where emergence was carefully observed, a pair of opposite sex issued from the same egg through an irregular, circular hole. The female emerged first, followed at once by the male, which, being the smaller, was able to walk freely through the exit hole cut by the female. Parasitized host eggs become turgid, but not noticeably distorted or enlarged; they usually appear blackish with a superficial dark pearly luster.

After emergence females remain close to the host eggshells until the wings are dried and the integument harded. Males on the other hand, are very active immediately after emergence, but confine their movements to a small area about the host eggshells and the females. Males have been observed attempting to mate within a few seconds after issuance and before either male or female had become dry. Males a few

days old also have been observed attempting to mate with dead females.

In good light the parasites usually do not remain motionless for more than a few seconds. This is one of the most active parasites the writer has yet observed, its movements being extremely rapid and almost constant, with frequent changing, or reversing of direction, so that it is difficult to make microscopic observations of living adults.

THE NORTH AMERICAN SPECIES OF THE GENUS MEGALOTHRIPS UZEL (Thysanoptera, Phlaeothripidae)

By J. C. CRAWFORD, *Bureau of Entomology and Plant Quarantine, United States Department of Agriculture*

Up to the present time three North American species have been described in this genus, but *hesperus* Moulton, having the characters of *Megathrips*, was transferred to that genus by Karny in 1919. To the two remaining in the genus is now added a new species from Oregon.

KEY TO FEMALES OF MEGALOTHRIPS

1. Antennae entirely dark; tube about 0.9 the length of head ..... *spinosus* Hood
   Antennal segments 3 and 4 at least partly yellow 2
2. Antennal segment 3 yellow in basal three-fourths, 4 in basal two-fifths, other segments all dark; tube about 0.75 the length of head ..... *picticornis* Hood
   Antennal segment 3 yellow, except extreme tip, 4 in basal three-fifths, 5 in basal one-half, 6 lightened or yellow basally; tube about as long as head ..... *schuhi*, new species

Megalothrips schuhi, new species

Female (macropterous holotype).—Length (distended) about 5.15 mm. Black, antennal segment 2 lighter apically, 3 yellow, with extreme apex brown, 4 yellow in basal three-fifths, 5 in basal one-half, 6 distinctly lightened or yellow in basal one-fourth; tarsi light brownish; wings almost clear, each with a median, narrow, longitudinal, dark stripe in basal half; major body setae pointed, brown.

Head elevated dorsally along median line as normal in the genus, cheeks in outline slightly concave just back of eyes, then somewhat convex to narrow basal collar; posterior ocelli about 2 μ from eyes; postocellar setae well-developed, postoculars situated almost on lateral lateral margins of head, 28 μ back of eyes; cheeks in outline usually with two short setae, dorsal aspect of head with about four pairs of short setae, of which one pair about midway from eyes to base of head